CLAIMS

We Claim:

1. A weight sensor for determining the weight of an occupant of a seat, comprising:

a bladder having an interior and being adapted to be arranged in a seat portion of the seat, said bladder including constraining means arranged in said interior for constraining fluid flow within said interior; and

at least one transducer for measuring the pressure of the fluid in said bladder.

2. The weight sensor of claim 1, wherein said constraining means comprise open cell foam.

3. The weight sensor of claim 1, wherein said bladder is cylindrical.

4. The weight sensor of claim 1, further comprising a container, said bladder being arranged in said container.

5. The weight sensor of claim 4, wherein said container is rectangular and said bladder is cylindrical.

6. The weight sensor of claim 4, wherein an orifice having an adjustable size is formed in said bladder opening to an interior of said container.

7. The weight sensor of claim 6, further comprising a control circuit arranged to control the amount of opening of said orifice.

8. The weight sensor of claim 1, wherein said bladder comprises a plurality of chambers, each of said chambers being adapted to be arranged at a different location in the seat portion of the seat.

9. An apparatus for determining the weight distribution of the occupant comprising the weight sensor of claim 8, said at least one transducer comprising a plurality of transducers, said bladder including a plurality of chambers, each of said transducers being associated with one of said chambers whereby the weight distribution of the occupant is obtained from the pressure measurements of said transducers.

10. The weight sensor of claim 1, wherein said at least one transducer consists of a single transducer.

11. A vehicle seat, comprising:

a seat portion adapted to support an occupant, said seat portion including a container having an interior containing fluid and a mechanism in said interior arranged to restrict flow of the fluid from one portion of said interior to another portion of said interior;

a back portion arranged at an angle to said seat portion; and

a measurement system arranged to obtain an indication of the weight of the occupant when present on said seat portion based at least in part on the pressure of the fluid in said container.

12. The seat of claim 11, wherein said mechanism is open cell foam.

13. The seat of claim 11, wherein said container is cylindrical.

14. The seat of claim 11, further comprising an additional container arranged around said fluid-containing container.

15. The seat of claim 14, wherein said additional container is rectangular and said fluid-containing container is cylindrical.

16. The seat of claim 14, wherein an orifice having an adjustable size is formed in said fluid-containing container opening to an interior of said additional container.

17. The seat of claim 16, further comprising a control circuit arranged to control the amount of opening of said orifice.

18. The seat of claim 11, wherein said seat portion includes a plurality of said containers, each of said containers being adapted to be arranged at a different location in the seat portion of the seat.

19. The seat of claim 11, wherein said measurement system comprises at least one transducer.

20. A method for determining the weight of an occupant of an automotive seat, comprising the steps of:

arranging a bladder having at least one chamber in a seat portion of the seat;

measuring the pressure in each of the at least one chamber; and

deriving the weight of the occupant based on the measured pressure.

21. The method of claim 20, wherein the at least one chamber comprises a plurality of individual chambers.

22. The method of claim 21, wherein the pressure in each of the chambers is measured by a respective transducer associated with the chamber.

23. The method of claim 22, further comprising the step of determining a distribution of the weight of the occupant based on the pressure measured by the transducers.

24. The method of claim 23, further comprising the step of determining a position of the occupant based on the weight distribution.

25. The method of claim 23, further comprising the step of determining a center of gravity of the occupant based on the weight distribution.

26. The method of claim 20, further comprising the steps of:

arranging the bladder in a container; and

permitting fluid flow between the bladder and the container.

27. The method of claim 26, further comprising the step of regulating the flow of fluid between the bladder and the container.

28. The method of claim 27, wherein the bladder includes an adjustable orifice leading to the container, the flow of fluid being regulated by adjusting the orifice.

29. A vehicle seat, comprising:

a seat portion adapted to support an occupant, said seat portion including a container having an interior containing fluid and being partitioned into multiple sections between which the fluid flows as a function of pressure applied to said seat portion,

a back portion coupled to and arranged at an angle to said seat portion; and

a measurement system arranged to obtain an indication of the weight of the occupant when present on said seat portion based at least in part on the pressure of the fluid in said container.

30. The seat of claim 29, wherein said interior of said container includes open cell foam.

31. The seat of claim 29, wherein said container is partitioned into an inner bladder and an outer container.

32. The seat of claim 31, wherein said inner bladder includes an orifice leading to said outer container.

33. The seat of claim 32, wherein said orifice has an adjustable size, further comprising a control circuit arranged to control the amount of opening of said orifice.

34. The seat of claim 29, wherein said measurement system comprises at least one transducer.

35. A seat for a vehicle, comprising:

a seat portion adapted to support an occupant, said seat portion including a bladder having a fluid-containing interior,

a back portion coupled to and arranged at an angle to said seat portion;

a mounting structure for mounting said seat portion to a floor pan of the vehicle and

a measurement system associated with said bladder and arranged to obtain an indication of the weight of the occupant when present on said seat portion based at least in part on the pressure of the fluid in said bladder.

36. The seat of claim 35, wherein said measurement system comprises at least one transducer for measuring the pressure of the fluid in said bladder.

37. The seat of claim 35, wherein said bladder including constraining means arranged in said interior for constraining fluid flow within said interior.

38. The seat of claim 37, wherein said constraining means comprise open cell foam.

39. The seat of claim 35, wherein said bladder includes a plurality of individual chambers.

40. The seat of claim 39, wherein said measurement system comprises a transducer arranged in connection with of said chambers.

41. A control system for controlling a vehicle component based on occupancy of a seat, comprising:

a bladder having at least one chamber adapted to arranged in a seat portion of the seat;

a measurement system for measuring the pressure in said at least one chamber;

an adjustment system arranged to adjust the component in the vehicle; and

a processor coupled to said measurement system and to said adjustment system for determining an adjustment for the component by said adjustment system based at least in part on the pressure measured by said measurement system.

42. The control system of claim 41, wherein said adjustment system is a system for adjusting deployment of an occupant restraint device.

43. The control system of claim 42, wherein the occupant restraint device is an airbag and said deployment adjustment system is arranged to control at least one of flow of gas into an airbag, flow of gas out of an airbag, rate of generation of gas and amount of generated gas.

44. The control system of claim 41, wherein said adjustment system is a system for adjusting the seat.

45. The control system of claim 44, wherein said seat adjustment system comprises at least one motor for moving the seat.

46. The control system of claim 41, wherein said adjustment system is a system for adjusting the steering wheel.

47. The control system of claim 46, wherein said steering wheel adjustment system comprises a motor coupled to the steering wheel.

48. The control system of claim 41, wherein said adjustment system is a system for adjusting a pedal.

49. The control system of claim 48, wherein said steering wheel adjustment system comprises a motor coupled to the pedal.

50. The control system of claim 41, wherein said bladder includes constraining means arranged in said interior for constraining flow of fluid within said interior, said measurement system measuring the pressure of the fluid in said bladder.

51. The control system of claim 50, wherein said constraining means comprise open cell foam.

52. The control system of claim 50, wherein said bladder comprises a plurality of chambers, each of said chambers being adapted to be arranged at a different location in the seat portion of the seat.

53. The control system of claim 52, wherein said measurement system comprises a plurality of transducer, each arranged in association with a respective one of said chambers.

54. The control system of claim 50, wherein said bladder consists of a single chamber, said measurement system comprising a transducer arranged in association with said single chamber.

55. The control system of claim 41, wherein said bladder has an interior containing fluid and a mechanism in said interior arranged to restrict flow of the fluid from one portion of said interior to another portion of said interior.

56. The control system of claim 55, wherein said mechanism is open cell foam.

57. The control system of claim 41, further comprising a container having a fluid-containing interior, said container being in flow communication with said bladder such that the fluid flows between said container and said bladder as a function of pressure applied to said container and said bladder.

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58. The control system of claim 57, wherein said bladder is arranged in an interior of said container.

59. The control system of claim 57, wherein said bladder has an adjustable orifice leading to said container, said measurement system being arranged in connection with said orifice.